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(54) **Pre-bent anatomically shaped self-aligning sanitary napkin**

Vorgebogene anatomisch geformte selbstausrichtende Damenbinde

Serviette hygiénique, précurbé, de forme anatomique, s'autoalignant

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EP-A- 0 335 253 EP-A- 0 405 403  
WO-A-90/14814 FR-A- 2 433 937  
US-A- 2 331 355 US-A- 2 662 527

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## Description

### FIELD OF THE INVENTION

[0001] The present invention relates to absorbent products, especially anatomically shaped absorbent products.

### BACKGROUND OF THE INVENTION

[0002] There is a continuing effort to improve absorbent products, such as diapers, sanitary napkins, wound dressings, bandages, incontinent pads and the like, that absorb body fluids and contain them well without leakage. Generally, it is preferred that such absorbent products be soft and readily conform to body contours.

[0003] A persistent problem with traditional absorbent products, especially feminine napkins, is that they are molded to the anatomy by pressure of the body and pressure from the panty. When the wearer pulls up her undergarment with the pad attached, pressure is put on to the pad when it comes in contact with the body. When the wearer sits down, her body weight forces the product to conform to her body shape. The absorbent filler, which is normally ground wood pulp, is forced to shift because of its loose structure of short fibers. When the pad is compressed to the shape by the body, the pulp yields and distorts in many directions. Such distorting can cause the pad to move off center or to either side thereby compromising its function as a fluid absorbent. The distorting, shifting pad is poorly fitting and incorrectly placed. The misplacement of the pad results in misalignment with the source of the fluid discharge and causes early product failure.

[0004] The recognition that the function of absorbent products is compromised by unwanted movement of the pad prompted the development of form-fitting absorbent products. For example, U.S. Patent 4,804,380, issued February 14, 1989, in the name of Lassen, et al., discloses a catamenial device having a length greater than about seven inches and having a fold at its longitudinal center of the back one-half to two-thirds of the device. The peak like shape of the back portion is said to mold to the perineum and the buttocks.

[0005] European Patent Application Publication No. 0 405 403 A2, discloses a panty-liner having at least one longitudinal fold which allows an adaptation of the width of the liner. The design allows adjustment of the width of the liner to conform to the width of the crotch of the panty.

[0006] U.S. Patent 2,331,355, issued October 12, 1943, in the name of Herman Strongson, discloses a catamenial pad having extra thickness at the central longitudinal portion. The central portion of the pad is gathered upwardly, and held in position by horizontal stitching through the base.

[0007] U.S. Patent 2,747,575, issued May 29, 1956, in the name of Berton Mercer, discloses a catamenial

pad having a longitudinal medial portion bulged to form a hump.

[0008] U.S. Patent 4,573,990, issued March 4, 1986, in the name of Hiroaki Ohsaki, discloses a disposable diaper being folded along its longitudinal center line into a generally inverted  $\Omega$ -shaped vertical cross sectional configuration.

[0009] U.S. Patent 4,595,392, issued June 17, 1986, in the names of Johnson and Lassen, discloses an interlabial pad having a cylindrodially-shaped central portion. The pad is formed by folding a pad blank along the central longitudinal axis and gathering and attaching the blank below the fold line to form a cylindrodially shaped center with radial flaps.

[0010] U.S. Patent 4,655,759, issued April 7, 1987, in the name of Romans-Hess, et al., discloses a catamenial pad with embossed channels adjacent to the longitudinal edges of the napkin to reduce side leakage.

[0011] U.S. Patent 4,701,177, issued October 20, 1987, in the name of Ellis, et al., discloses an absorbent pad shaped generally in an hourglass configuration with a middle portion somewhat thicker than the absorbent portions at the ends of the pad. The pad is provided with upstanding side portions in the middle of each long edge where the absorbent is narrower.

[0012] U.S. Patent 4,790,838, issued December 13, 1988, in the names of Pigneul and Ruppel, discloses a device for forming a sanitary pad having a central biconcave area of reduced width.

[0013] U.S. patent 4,897,084, issued January 30, 1990, in the names of Ternstrom and Lundahl, discloses an absorbent article having elastic threads arranged in a V-shaped pattern, wherein the V-shaped patterns diverge from the center of one end of the article to the corners of the article at its opposite end, thereby forming a basin or pocket which extends along the whole length of the article.

[0014] U.S. Patent 4,935,021, issued June 19, 1990, in the names of Huffman and Pieniak, discloses a disposable diaper having a center gathering means for providing a longitudinal gathering force.

[0015] U.S. Patent 5,057,096, issued October 15, 1991, in the name of Frances Faglione, discloses a genital vulva pad/sanitary napkin wherein the vulva pad member is dimensioned and configured to fit inside a woman's vulva and releasably secured to the sanitary napkin by flexible tangs.

[0016] U.S. Patent 5,127,911, issued July 7, 1992, in the name of Eva Baharav, discloses a sanitary napkin having a mechanism comprising a string means which allows a user the option of forming a contoured projection in the napkin by drawing together part of the longitudinal edges of the napkin so as to form a labial feminine pad to be interposed within the labia majora of the user of the pad.

[0017] It has also been suggested that the problems of unwanted movement, roping, and twisting may be overcome by fixing the pad to the undergarment more

securely. U.S. Patent 5,098,422, issued March 24, 1992, in the name of Davis, et al., discloses an absorbent product having a semi-rigid clip means for retaining the absorbent product with respect to an undergarment.

[0018] European Patent Application Publication Nos. 0 335 253 A1 and 0 335 252 A2, are directed to disposable absorbent articles having a flexure-resistant deformation. The sanitary napkins have a convex upward configuration, which configuration relies on the lateral compressive forces of the wearer's thighs to form or maintain the configuration.

[0019] This document describes a sanitary napkin comprising a liquid permeable topsheet, an absorbent core, and a deformation element serving as a liquid impermeable backing. In an embodiment of the napkin, the deformation element is referred to the bottom surface of the napkin. The deformation element comprises downwardly oriented protuberance proximate the longitudinal edges which is bordered by substantially planar side margins and a planar central region.

[0020] In US-A- 2 662 527 an absorbent pad is described which comprises a main body portion and a second portion which is formed of one or more layer(s). The second portion can be 114,3 mm (4,5 inches) long, 50,8 mm (2inch) wide and 50,8 mm (2 inches) high. The second portion is partially longitudinally disposed in the center of the main body portion. It is shown that the center portion of the second portion is thicker than one end of the second portion. With that pad improved comfort, cleanliness and sanitation to the wearer is achieved.

[0021] WO-A-90/14814 discloses an absorbent article is shown comprising a liquid-permeable sheet, a liquid-impermeable sheet and an absorbent pad, wherein the article has edges-partsformed by means of adhesive binding.

[0022] US-A- 2 331 355 a catamenial pad having two stripes of adhesive.

[0023] FR-A-2433937 discloses an absorbent pad comprising a fluid permeable body facing cover, an absorbent element, a central patially longitudinally disposed core, and a flexible, moisture barrier. That pad having a convex shape in the approximate center portion of the body facing surface. The preamble of claim 1 is based on this document.

[0024] Despite advances in absorbent products, currently available products continue to exhibit problems such as leakage attributed to unwanted movement or distortion of the pad. Accordingly, there is a need for absorbent structures designed to improve the fit of the absorbent product to the body, thereby reducing unwanted movement or misalignment which may result in leakage.

[0025] It is an object of this invention to provide prebent, anatomically shaped absorbent products that are self-aligning to maintain correct placement of the pad on the body. Such products generally have a convex shape in the approximate center portion of the body facing surface which shape allows the product to conform to the body.

## SUMMARY OF THE INVENTION

[0026] The present invention provides prebent, anatomically shaped, self-aligning absorbent products. Such absorbent products generally comprise a fluid permeable body facing cover, an absorbent element, a central, partially longitudinally disposed core, and a flexible, moisture barrier having partially longitudinally disposed permanent creases proximate to the longitudinal edges of the garment facing side of the moisture barrier. Such products have a convex shape in the approximate center portion of the body facing surface which shape allows the product to conform to the body and more closely approximate the source of fluid discharge thereby reducing unwanted movement or misalignment which may result in leakage, the central, partially longitudinally disposed core and partially longitudinally disposed creases causing the product to have a convex shape from both a cross-sectional view and a longitudinally-sectional view. Such products further generally have an hourglass shape which complements the general contour of the inside surfaces of the thighs.

[0027] Other particular embodiments of the invention are set out in dependent claims 2-10.

## BRIEF DESCRIPTION OF THE DRAWINGS

[0028] FIGS. 1 and 1A are cross-sectional views of absorbent pads of this invention.

[0029] FIG. 2 is an illustration of the central, partially longitudinally disposed core of an absorbent pad of this invention. FIG. 2A is a cross-sectional view of the central, partially longitudinally disposed core of an absorbent pad of this invention. FIG. 2B is a longitudinal-sectional view of an absorbent pad of this invention.

[0030] FIG. 3 is an illustration of the garment facing side of the moisture barrier of an absorbent pad of this invention.

## DETAILED DESCRIPTION OF THE INVENTION

[0031] Generally, the absorbent pads provided by the present invention comprise a fluid permeable body facing cover, an absorbent element, a central, partially longitudinally disposed core, and a flexible, moisture barrier having partially longitudinally disposed permanent creases proximate to the longitudinal edges of the garment facing side of the moisture barrier. The key features of these absorbent products include the central, partially longitudinally disposed core, and the partially longitudinally disposed permanent creases proximate to the longitudinal edges of the garment facing side of the moisture barrier. These elements provide the absorbent products with a convex shape in the approximate center portion of the body facing surface the central, partially longitudinally disposed core and partially longitudinally disposed creases causing the product to have a convex shape from both a cross-sectional view and a longitudi-

nally-sectional view which shape allows the product to conform to the body and more closely approximate the source of fluid discharge.

[0032] In this invention, the central, partially longitudinally disposed core may comprise a roll or cable of resilient material. The roll or cable is thickest in its middle portion and has tapered ends. The roll or cable does not extend for the entire length of the pad, but rather is partially longitudinally disposed in the approximate center of the pad. This reduces the thickness of the pad at either end of the pad thereby allowing the product to cup the labia and fold into the buttock.

[0033] The partially longitudinally disposed permanent creases also do not extend for the length of the pad, but rather are partially longitudinally disposed on either side of the approximate center of the pad. The creases generally decrease the width of the middle portion of each of the longitudinal edges of the pad thereby causing the pad to assume a contoured or hourglass shape.

[0034] The central, partially longitudinally disposed core and partially longitudinally disposed creases cause the product to have a convex shape from both a cross-sectional view and a longitudinally-sectional view. This shape allows the pad to closely approximate the source of fluid discharge thereby reducing unwanted movement or misalignment which may result in leakage.

[0035] Referring now to the embodiments illustrated in the drawings, FIGS. 1 and 1A, are cross-sectional views of an absorbent pad 10 having a flexible moisture barrier 12 which is provided with partially longitudinally disposed permanent creases 14 and 16 proximate to the longitudinal edges 18 and 20 of the garment facing side of the pad 10. The pad 10 has a central, partially longitudinally disposed core 22 comprising a roll or cable of resilient material extending partially longitudinally in the approximate center of the pad 10. The pad has an absorbent element 24 and a fluid permeable body facing cover 26.

[0036] In a preferred embodiment, the pad 10 is further provided with a layer of resilient material 28 secured to the body facing side of the moisture barrier 12 and stretching across the width of the absorbent pad 10. This layer of resilient material 28 helps define creases 14 and 16. This layer of resilient material 28 may be secured to the moisture barrier 12 by methods known to those in the art. Such methods may include securing the resilient layer 28 to the moisture barrier 12 with glue. The pad 10 may also, optionally, be provided with a moisture permeable coverstock 30 on the body facing side of the body facing cover 26.

[0037] Illustrated in FIG. 2, is the central, partially longitudinally disposed core 22 comprising a resilient material which material may be rolled such that the approximate center portion 40 of the core 22, the thickest portion of the core occurring at about the center of the length 46 of the core 22, is thicker than ends 42 and 44 of the core 22. A core 22 of this shape may be formed

by rolling a square of resilient material from corner to corner. A core of this shape may also be formed by extruding a cable of resilient material using methods known to those in the art.

5 [0038] The core 22 does not extend for the entire length of the pad 10, but rather is partially longitudinally disposed in the approximate center of the pad. FIG. 2B is a longitudinal-sectional view of the pad 10 which shows that because the approximate center 40 of the core 22 is thicker than the ends 42 and 44, and the core 10 22 does not extend for the entire length of the pad 10, the pad 10 assumes a longitudinally convex shape. This shape allows the product to cup the labia and fold into the buttock.

15 [0039] In preferred embodiments, the approximate center 40 of the core 22 has a diameter 48 of between about 12.7 mm ( $\frac{1}{2}$  inch) and 38.1 mm ( $1\frac{1}{2}$  inches), and the core 22 has a length 46 of between about 76.2 mm (3 inches) and 114.3 mm ( $4\frac{1}{2}$  inches). In one embodiment, the approximate center 40 of the core 22 has a 20 diameter 48, as illustrated in FIG. 2A, of about 19 mm ( $\frac{3}{4}$  inches) and the core 22 has a length 46 of about 101.6 mm (4 inches).

25 [0040] FIG. 3 is an illustration of the garment facing side of the moisture barrier 12 which shows permanent creases 14 and 16 partially longitudinally disposed on the garment facing side of the moisture barrier 12. Such creases may be formed, for example, by adhesive or heat stitching. The adhesive may be a hot melt adhesive, either pressure sensitive or not.

30 [0041] In one embodiment, the garment facing side of the moisture barrier 12 is provided with two strips of adhesive which strips are each from about 25.4 mm (1 inch) to 44.4 mm ( $1\frac{3}{4}$  inches) in length and have a distance of between about 38.1 mm ( $1\frac{1}{2}$  inches) and 44.4 35 mm ( $1\frac{3}{4}$  inches) between them, which distance is measured from the approximate center of one adhesive strip to the approximate center of the other adhesive strip. Using methods known to those skilled in the art, a folding tool may be utilized to put pressure on the moisture barrier 12 to form the partially longitudinally disposed creases 14 and 16. Utilizing a folding tool, the moisture barrier 12 is pushed in from the sides at the flange seal areas 32 and 34 thereby forcing the moisture barrier 12 into 40 an inverted "V" shaped crease with the adhesive strips being incorporated in the creases 14 and 16. This decreases the width of the middle portion of each of the longitudinal edges 18 and 20 of the pad thereby causing the pad to assume a contoured or hourglass shape which shape is complementary to the shape of the medial aspects of the thighs. This shape allows the pad to self-align and makes it easier to keep the pad centered.

45 [0042] In a preferred embodiment, the adhesive strips are each about 25.4 mm (1 inch) in length and have a distance of about 40.6 mm (1.6 inches) between them, which distance is measured from the approximate center of one adhesive strip to the approximate center of the other adhesive strip. However, different shaped adhe- 55

sive patterns may be used and the spacing between the adhesive strips varied with the shape of the pad.

[0043] On the underside of the moisture barrier 12, on the side of the pad facing the wearer's undergarment, there may be placed adhesive attachment means 50 and 52 for temporarily, but securely, adhering the pad to the crotch portion of that garment. The attachment means may comprise adhesive lines covered with release strips which, when peeled from the adhesive strips, leave the adhesive tacky. Alternately, the attachment means may comprise pressure-sensitive adhesive tape, said tape having a first face permanently adhered to the shell and an opposite second face adapted to be temporarily attached to the nether garment.

[0044] Turning now to a more detailed description of the components of the pads of this invention, the body facing cover 26 of the pad generally comprises a film or fabric having a high degree of moisture permeability. Films made from hydrophobic bicomponent fibers, for example, polyester/polyester and polyester/polyethylene, are especially suitable. A typical hydrophobic bicomponent fiber has a polyester core and a polyethylene sheath. Preferably, the fabric used for the body facing cover is a lightweight fabric in the range of 0.601 to 0.017 g/cm<sup>2</sup> (0.3 to 5.0 oz. per square yard) and with a density less than 0.2 g/cm<sup>3</sup>. The most suitable fabrics have unusually high elongation, loft, softness and drape characteristics. Films which are perforated or noncontinuous are also satisfactory. Though the cover is moisture permeable, it is preferably of the type which after permeation of the moisture, prevents strike-back of the body fluid when the absorbent structure is approaching saturation. The body facing cover is readily sealable to the outer rim of the moisture barrier, for example, by a heat seal or printed adhesive. The body facing cover may have different characteristics such as an embossed texture.

[0045] The absorbent element 24 may comprise any absorbent capable of absorbing human exudate. For example, the absorbent element may comprise a sheet of tenderized peat moss made by methods well known in the art. Generally, the raw peat moss material utilized is peat moss of the sphagnum variety and is preferably capable of absorbing at least about 15 times, preferably about 20 times, its weight in water. The peat moss is generally screened and then separated into a usable fraction and peat fines. The screened peat moss may be combined with other absorbent materials, preferably fibrous and cellulosic in nature. These art-recognized materials may include Kraft, wood pulp and mechanical wood pulp. This material is generally a chemically treated, long fibered pulp such as sulfite and sulfate wood pulps. A suitable mixture of ingredients for the absorbent elements of the invention may comprise from about 5 to about 20 percent by weight of Kraft wood pulp, with the remainder being essentially peat moss. Generally, the absorbent element is about 3.175 to 6.35 mm (1/8 to 1/4 inch) thick. It is understood that those familiar with the

art may find a wide range of peat moss compositions as well as other absorbent materials for use with the products of this invention. Examples include but are not limited to blends of wood pulp fiber and superabsorbent materials, and laminates of wet-laid or air-laid pulp fabrics and superabsorbent.

[0046] The core 22 and layer of material 28 independently comprise a resilient material, for example, a polyester fiber such as Kem-Wove, manufactured by Kem-Wove, Inc. For the purposes of this invention, it is preferred that the material employed has good wet stability. Other materials, non-wovens, bicomponent fibers, and the like, may be employed by the present invention, provided that such materials are able to maintain the convex shape of the product during use. It has been found that when a square of material, such as Kenwove, having a base weight of about 0.0051 g/cm<sup>2</sup> (1-1/2 oz. per square yard), is air bonded and rolled from corner to corner as described herein, it has the strength to maintain the convex shape of the pad during use.

[0047] The moisture barrier 12 may be any flexible, liquid permeable material. Especially suitable are liquid-impermeable polyolefin films, e.g., polyethylene or polyethylene terephthalate.

[0048] On the underside of the barrier there may be placed adhesive attachment means for temporarily, but securely, adhering the shell to the crotch portion of the wearer's nether garment. The attachment means may comprise adhesive lines covered with release strips which, when peeled from the adhesive strips, leave the adhesive tacky. Alternately, the attachment means may comprise pressure-sensitive adhesive tape, said tape having a first face permanently adhered to the shell and an opposite second face adapted to be temporarily attached to the nether garment.

[0049] In a preferred embodiment of the invention, a fibrous layer 30 is interposed between absorbent element 24 and moisture-permeable cover 26. This fibrous layer preferably comprises heat-fusible hydrophobic fibers or a blend of heat-fusible hydrophobic fibers and hydrophilic fibers. Examples of hydrophobic fibers include polyester/polyester, polyester/polyethylene and polyethylene/polyester bicomponent fibers. Examples of hydrophilic fiber include rayon, cotton and wood pulp fibers. The ratio of hydrophobic to hydrophilic fiber can vary, but, in the preferred embodiment, a greater amount of hydrophobic than hydrophilic fiber is utilized. Fibrous layer 30, containing heat-fusible fibers, may be stabilized by exposure to heat. It is also preferred to fuse cover 26 to the fibrous layer, and this can be accomplished by utilizing a cover material made from a fusible fiber, such as a polyethylene/polyester bicomponent fabric. A particular example is a fabric called "Enka", available from Johnson & Johnson Worldwide Absorbent Products Company. Cover material 26 is placed over fibrous layer 30, and the combination is exposed to heat. This fuses the fibers in both fibrous layer 30 and cover material 26, stabilizing fibrous layer 30 and fusing cover

26 to said fibrous layer.

[0050] The combination of cover material 26 and fibrous layer 30 may be thermoformed create a desired topography, for example, a pattern of longitudinal channels to wick discharged fluid longitudinally and prevent lateral wicking. For example, cover material 26 may be placed on a screen with the desired cover topography, and the fibers of which layer 30 is comprised are placed on top of cover material 26. A vacuum is applied to pull the materials into the shape of the screen, and the material is then heated to fuse the hydrophobic fibers. See the disclosure in U.S.S.N. \_\_\_\_\_ (PPC-454, JJWA-0003), filed herewith

#### Claims

1. An absorbent pad (10) comprising a fluid permeable body facing cover (26), an absorbent element (24), a central core (22) being disposed partially longitudinally, and a flexible moisture barrier (12), said absorbent pad (10) having a convex shape in the approximate center portion of the body facing surface, characterized by said flexible moisture barrier (12) having partially longitudinally disposed permanent creases (14, 16) proximate to the longitudinal edges (18, 20) of the garment facing side of said moisture barrier (12), and the central, partially longitudinally disposed core (22) and the partially longitudinally disposed creases (14, 16) causing the pad (10) to have a convex shape from both a cross-sectional view and a longitudinally-sectional view.
2. The absorbent pad of claim 1 wherein said central, partially longitudinally disposed core (22) comprises a resilient material which material is rolled such that the approximate center portion (40) of said core is thicker than the ends (42, 44) of said core.
3. The absorbent pad of claim 2 wherein said approximate center portion (40) of said core (22) has a diameter (48) of between about 12.7 mm ( $\frac{1}{2}$  inch) and 38.1 mm ( $1\frac{1}{2}$  inches), and said core has a length (46) of between about 76.2 mm (3 inches) and 114.30 mm ( $4\frac{1}{2}$  inches).
4. The absorbent pad of claim 3 wherein said approximate center portion (40) of said core (22) has a diameter (48) of about 19 mm ( $\frac{3}{4}$  inches) and said core has a length (46) of about 101.6 mm (4 inches).
5. The absorbent pad of claim 1 wherein said central, partially longitudinally disposed core (22) comprises a cable of resilient material which cable is thickest in the approximate center portion (40) and has tapered ends.
6. The absorbent pad of claim 5 wherein the approxi-

mate center portion of said cable has a diameter of between about 12.7 mm ( $\frac{1}{2}$  inch) and 38.1 mm ( $1\frac{1}{2}$  inches) and said cable has a length of between about 76.2 mm (3 inches) and 114.3 mm ( $4\frac{1}{2}$  inches).

7. The absorbent pad of claim 6 wherein said approximate center portion of said cable has a diameter of about 19 mm ( $\frac{3}{4}$  inches) and said cable has a length of about 101.6 mm (4 inches).
8. The absorbent pad of claim 1 wherein each of said partially longitudinally disposed permanent creases is formed with adhesive.
9. The absorbent pad of claim 8 wherein said adhesive is a hot melt adhesive.
10. The absorbent pad of claim 8 wherein said adhesive is provided to the garment facing side of said moisture barrier in two strips which strips are each from about 25.4 mm (1 inch) to 44.4 mm ( $1\frac{3}{4}$  inches) in length and have a distance of between about 38.1 mm ( $1\frac{1}{2}$  inches) and 44.4 mm ( $1\frac{3}{4}$  inches) between them, said distance being measured from the approximate center of one adhesive strip to the approximate center of the other adhesive strip.

#### Patentansprüche

1. Absorptionskissen (10) mit einer flüssigkeitsdurchlässigen, körperzugekehrten Deckschicht (26), einem Absorptionselement (24), einem zentralen, teilweise in Längsrichtung angeordneten Kern und einer flexiblen Feuchtigkeitssperre (12), wobei das Absorptionskissen (10) im angenähert mittleren Teil der körperzugewandten Seite eine konvexe Form hat, dadurch gekennzeichnet, daß die flexible Feuchtigkeitssperre (12) teilweise in Längsrichtung angeordnete, permanente Falten (14, 16) in der Nähe der Längskanten (18, 20) der der Bekleidung zugekehrten Seite der Feuchtigkeitssperre (12) aufweist und der zentrale, teilweise in Längsrichtung angeordnete Kern (22) und die teilweise in Längsrichtung angeordneten, permanenten Falten (14, 16) bewirken, daß das Kissen (10) eine konvexe Form sowohl in Querschnittsrichtung als auch in Längsschnittsrichtung aufweist.
2. Absorptionskissen nach Anspruch 1, bei dem der zentrale, teilweise in Längsrichtung angeordnete Kern (22) ein elastisches Material aufweist, das gerollt ist, so daß der angenähert mittlere Teil (40) des Kerns dicker als die Enden (42, 44) des Kerns ist.
3. Absorptionskissen nach Anspruch 2, bei dem der angenähert mittlere Teil (40) des Kerns (22) einen

Durchmesser (48) zwischen etwa 12,7 mm (1/2 Inch) und 38,1 mm (1 1/2 Inch) hat und der Kern eine Länge (46) zwischen etwa 76,2 mm (3 Zoll) und 114,30 mm (4 1/2 Inch) hat.

4. Absorptionskissen nach Anspruch 3, bei dem der angenähert mittlere Teil (40) des Kerns (22) einen Durchmesser (48) von etwa 19 mm (3/4 Inch) hat und der Kern eine Länge (46) von etwa 101,6 mm (4 Inch) hat.
5. Absorptionskissen nach Anspruch 1, bei dem der zentrale, teilweise in Längsrichtung angeordnete Kern (22) ein Kabel aus einem elastischen Material aufweist, das in dem angenähert mittleren Teil (40) am dicksten ist und verjüngte Enden hat.
6. Absorptionskissen nach Anspruch 5, bei dem der angenähert mittlere Teil des Kabels einen Durchmesser zwischen etwa 12,7 mm (1/2 Inch) und 38,1 mm (1 1/2 Inch) hat und das Kabel eine Länge von zwischen etwa 76,2 mm (3 Inch) und 114,3 mm (4 1/2 Inch) hat.
7. Absorptionskissen nach Anspruch 6, bei dem der angenähert mittlere Teil des Kabels einen Durchmesser von etwa 19 mm (3/4 Inch) hat und das Kabel eine Länge von etwa 101,6 mm (4 Inch) hat.
8. Absorptionskissen nach Anspruch 1, bei dem jede der teilweise in Längsrichtung angeordneten, permanenten Falten mit einem Klebmittel versehen ist.
9. Absorptionskissen nach Anspruch 8, bei dem das Klebmittel ein Heißschmelzkleber ist.
10. Absorptionskissen nach Anspruch 8, bei dem das Klebmittel an der der Bekleidung zugekehrten Seite der Feuchtigkeitsperre zwei Streifen bildet, die jeweils eine Länge von etwa 25,4 mm (1 Inch) bis 44,4 mm (1 3/4 Inch) und einen Abstand von zwischen etwa 38,1 mm (1 1/2 Inch) und 44,4 mm (1 3/4 Inch) haben, wobei der Abstand zwischen den Streifen von der ungefähren Mitte des einen Klebestreifens zur ungefähren Mitte des anderen Klebestreifens gemessen wird.

#### Revendications

1. Une serviette hygiénique absorbante (10) comprenant un revêtement faisant face au corps perméable aux fluides (26), un élément absorbant (24), un noyau central (22) disposé partiellement longitudinalement et une barrière d'humidité flexible (12), ladite serviette hygiénique absorbante (10) présentant une forme convexe dans la portion de centre approximative de la surface faisant face au corps,

caractérisée en ce que ladite barrière d'humidité flexible (12) présente des plis (14, 16) permanents disposés partiellement longitudinalement à proximité des bords longitudinaux (18, 20) du côté faisant face au vêtement de ladite barrière d'humidité (12), et le noyau central (22), disposé partiellement longitudinalement, et les plis (14, 16) disposés partiellement longitudinalement forcent la serviette (10) à présenter une forme convexe à la fois d'après une vue en coupe transversale et une vue en coupe longitudinale.

2. La serviette hygiénique absorbante selon la revendication 1, dans laquelle ledit noyau central (22) disposé partiellement longitudinalement comprend une matière résiliente, laquelle matière est roulée de telle sorte que la portion de centre approximative (40) dudit noyau (22) est plus épaisse que les extrémités (42, 44) dudit noyau.
3. La serviette hygiénique absorbante selon la revendication 2, dans laquelle ladite portion de centre approximative (40) dudit noyau (22) présente un diamètre (48) compris entre environ 12,7 mm (0,5 pouce) et 38,1 mm (1,5 pouce) et ledit noyau présente une longueur (46) comprise entre environ 76,2 mm (3 pouces) et 114,30 mm (4,5 pouces).
4. La serviette hygiénique absorbante selon la revendication 3, dans laquelle ladite portion de centre approximative (40) dudit noyau (22) présente un diamètre (48) de l'ordre de 12 mm (3/4 pouce) et ledit noyau présente une longueur (46) de l'ordre de 101,6 mm (4 pouces).
5. La serviette hygiénique absorbante selon la revendication 1, dans laquelle ledit noyau central (22) disposé partiellement longitudinalement comprend un câble de matière résiliente, lequel câble est plus épais dans la portion de centre approximative (40) et présente des extrémités effilées.
6. La serviette hygiénique absorbante selon la revendication 5, dans laquelle la portion de centre approximative dudit câble présente un diamètre compris entre environ 12,7 mm (0,5 pouce) et 38,1 mm (1,5 pouce) et ledit câble présente une longueur comprise entre environ 76,2 mm (3 pouces) et 114,30 mm (4,5 pouces).
7. La serviette hygiénique absorbante selon la revendication 6, dans laquelle la portion de centre approximative dudit câble présente un diamètre de l'ordre de 19 mm (3/4 pouce) et ledit câble présente une longueur de l'ordre de 101,6 mm (4 pouces).
8. La serviette hygiénique absorbante selon la revendication 1, dans laquelle chacun desdits plis perma-

nents disposés partiellement longitudinalement est formé d'un adhésif.

9. La serviette hygiénique absorbante selon la revendication 8, dans laquelle ledit adhésif est un adhésif thermofondu. 5
10. La serviette hygiénique absorbante selon la revendication 8, dans laquelle ledit adhésif est prévu sur le côté faisant face au vêtement de ladite barrière d'humidité en deux bandes, lesquelles bandes présentent chacune une longueur comprise entre environ 25,4 mm (1 pouce) et 44,40 mm (1 3/4 pouce) et une distance entre elles comprise entre environ 38,1 mm (1,5 pouce) et 44,40 mm (1 3/4 pouce), ladite distance étant mesurée depuis le centre approximatif d'une bande adhésive jusqu'au centre approximatif de l'autre bande adhésive. 10 15

20

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50

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FIG.1

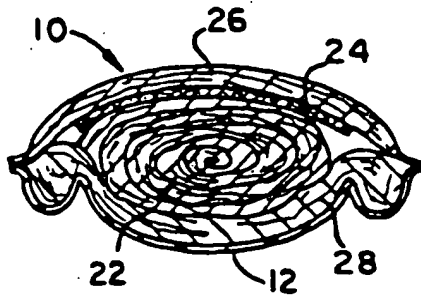


FIG.1A

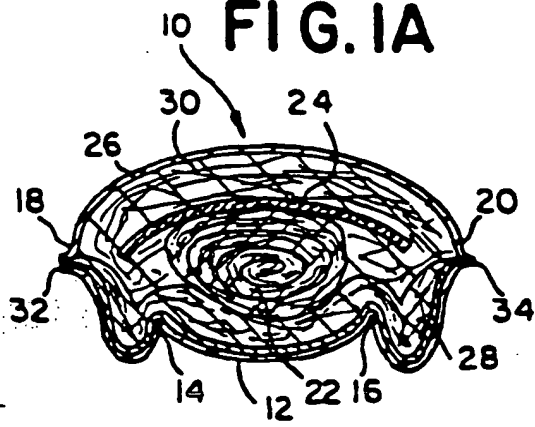


FIG.2

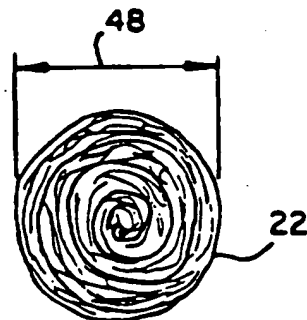
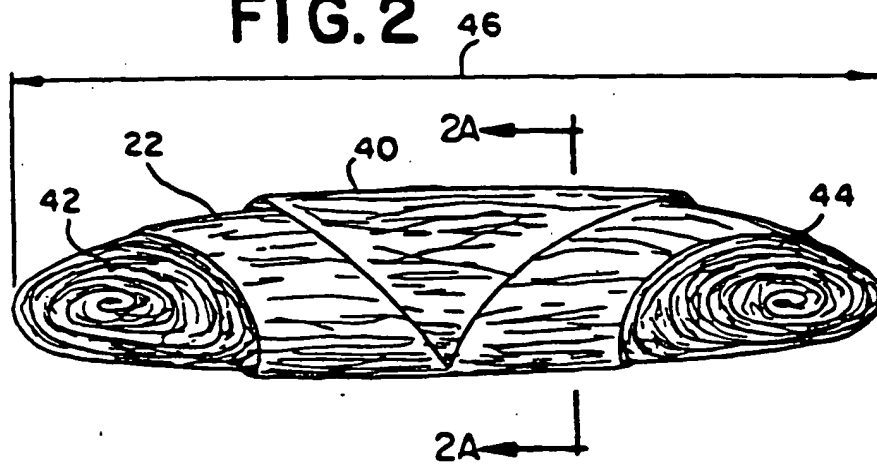


FIG. 2A

